REMARKS

Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuberasampath et al. (U.S. Patent No. 5,674,844, issued in 1997), in view of Cassidy et al. (U.S. Patent No. 6,280,474 B1, issued 28 August 2001).

The Court of Appeals for the Federal Circuit has explicitly addressed § 103 and followed the approach the Supreme Court set forth for applying that provision. Section 103 provides, in pertinent part:

A patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103(a).

The Supreme Court in *Graham* held that:

While the ultimate questions of patent validity is one of law, the § 103 condition, which is but one of three conditions, each of which must be satisfied, lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquires may have relevancy.

> Thus, under *Graham*, the obviousness inquiry is highly fact specific, and requires an examination of the following: (1) the scope and content of the prior art; (2) the differences between the patented invention and what already existed in the prior art; (3) the ordinary level of skill of people working in the field; and (4) other objective evidence which may suggest that the invention would not have been obvious. The Court also warned lower courts to "guard against slipping into use of hindsight,"...and to resist the temptation to read into the prior art the teachings of the invention in issue." 383 U.S. at 36. *See also Ashland Oil, Co. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 291 (Fed. Cir. 1985), *cert. denied* 475 U.S. 1017 (1986).

Graham v. John Deere, Co., 383 U.S. 1 (1966).

> [R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

KSR Int'l Cov. Teleflex, 2007 WL 1237837 (Sup. Ct. 2007).

Additionally, an invention also may not be rendered obvious unless the prior art is sufficiently enabling. *Motorola, Inc. v. Interdigital Technology Corp.*, 121 F.3d 1461, 1471 (Fed. Cir. 1997); *Beckman Instruments, Inc. v. LKB Produkter AB*, 892 F.2d 1547, 1551 (Fed. Cir. 1989).

The rejection of pending claims as unpatentable under 35 U.S.C. § 103(a) are respectfully traversed, since a *prima facie* case of obviousness has not been made by the Examiner.

In the presently pending application, the use of human inhibin A and inhibin B to increase bone strength is claimed. Inhibin A and B are heterodimeric proteins of the TGF Beta super family made of different A and B subunits. This heterodimeric hormone is composed of an inhibin alpha subunit complexed with either an inhibin beta-A subunit, to form inhibin A, or an inhibin beta-B subunit, to form inhibin B.

Kuberasampath U.S. Patent No. 5,674,844 discloses a treatment to prevent loss of and increase bone mass in metabolic bone diseases, by administering a morphogen. A long list of potential morphogens are disclosed in the '844 patent. Included in this list are "inhibins/activin proteins." The Kuberasampath et al. patent provides a general list of compounds that may function and then specifically describes the characteristics of those that do have the characteristics that they claim are beneficial to prevent bone loss.

Additionally, the data in the '844 application supports a dimeric protein that comprises an amino acid sequence selected from the group consisting of:

(a) a sequence having at least 70% homology with the C-terminal seven-cysteine skeleton of human OP-1, residues 38-139 of SEQ ID NO: 5, and

(b) generic Sequence 6, SEQ ID NO: 31;

A sequence alignment of only the seven-cysteine skeleton of the 30-139 sequence, is shown below, comparing BMP7 (OP-1) with the inhibin alpha subunit and the activin beta A subunit which when combined with the inhibin alpha subunit comprises inhibin A. This alignment shows that the 70% homology for the 109 as described by the OP-1 patent is not satisfied.

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                                    10        20        30        40        50
60
                    |         |         |         |         |         |
BMP7xx0         CKKHELYVSFRDLGWQDWIIAPEGYAAYYCEGECAFPLN----SYMNATNHAIVQTLVHF
Activin         CCKKQFFVSFKDIGWNDWIIAPSGYHANYCEGECPSHIAGTSGSSLSFHSTVINHYRMRG
Inhibin         CHRVALNISFQELGWERWIVYPPSFIFHYCHGGCGLHIP----PNLSLPVPGAPPTPAQP
                *  :   : :**:::**: **: * .:    **.* *   :     . :.          :
Prim.cons.      C3K33L3VSF3DLGW3DWIIAP3GY3A3YCEGEC33HI3GTSGS3LS33333I33T3333

                        70        80        90       100
                        |         |         |         |
BMP7xx0         INPETVPKPCCAPT--QLNAISVLYFDDS-SNVILKKYRNMVVRACGCH
Activin         HSPFANLKSCCVPT--KLRPMSMLYYDDG-QNIIKKDIQNMIVEECGCS
Inhibin         YSLLPGAQPCCAALPGTMRPLHVRTTSDGGYSFKYETVPNLLTQHCACI
                  .  :.**..   :..: :  .*.  ..  :  *::.. *.*
Prim.cons.      3SP3333KPCCAPTPG3LRP3SVLY3DDGG3N3I3K333NM3V33CGC3
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Alignment data :
Alignment length : 109
Identity (*) : 18 is 16.51 %
Strongly similar (:) : 19 is 17.43 %
Weakly similar (.) : 18 is 16.51 %
Different : 54 is 49.54 %
Sequence 0001 : BMP7xx0 (102 residues).
Sequence 0002: Activin (106 residues).
Sequence 0003: Inhibin (105 residues).

Inhibin A and inhibin B do not fall within the definition of the proteins that Kuberasampath taught had beneficial properties. Indeed, when one reviews the laundry list of morphogens, activin is disclosed in conjunction with inhibin; however, the applicant specifically discloses in the specification of the '005 patent application that activin did not work for the claimed use. In addition, the use of inhibin A or inhibin B will initiate a signaling pathway different from activins or BMPs listed in the Kuberasampath patent, given that an additional receptor (betaglycan) is required for inhibin action, and not activin or BMP action.

The fact that activin operates in the opposite manner according to the applicant's experiments, indicate that there is no level of predictability with respect to the claimed invention.

Consequently, it would be understood by one skilled in the art that there is no reasonable chance of success of viewing a laundry list of possible compounds and determining their use.

Cassidy et al. U.S. Patent No. 6,280,474, discloses a device for tissue repair. The implant is made of a dehydrated crosslinked biocompatible polymer that can include a biologically active agent. A long list of biologically agent polymers are provided. The function of the implant is different than a pharmacologic composition. The use of soluble recombinant inhibin A without a polymer carrier to increase bone formation is not disclosed or suggested to one skilled in the art by the Cassidy patent.

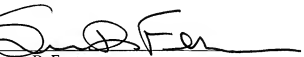
This field is a highly unpredictable field. A generic suggestion coupled with an express teaching away is not sufficient to render the presently claimed invention obvious to one skilled in the art.

Applicant respectfully suggests that the pending claims are in condition for allowance.

Respectfully Submitted,

BUTLER, SNOW, O'MARA,
STEVENS & CANNADA

Date: 8-13-07

By: 

Susan B. Fentress
Registration No. 31,327
6075 Poplar Avenue, Suite 500
Memphis, TN 38187
Telephone: 901-680-7319